

# **Green Zia Environmental Excellence Program Achievement-level Application: JOHNSON CONTROLS NORTHERN NEW MEXICO**

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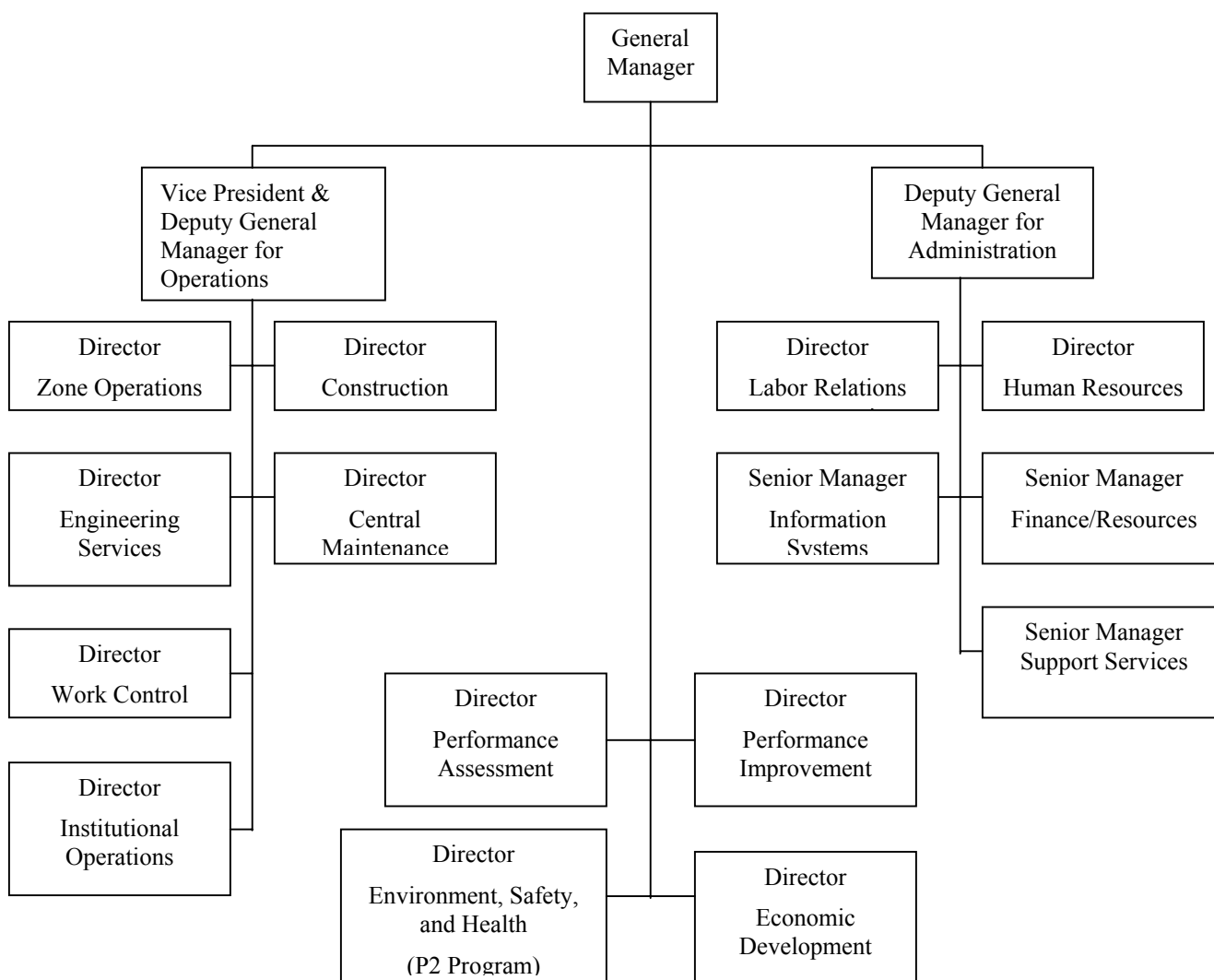
## Green Zia Environmental Excellence Program Achievement-level Application: JOHNSON CONTROLS NORTHERN NEW MEXICO

### Organizational Overview

#### 0.1 Basic Organizational Description

Johnson Controls Northern New Mexico (JCNNM) is the facility support subcontractor to the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. JCNNM operates and maintains LANL facilities, equipment, property, grounds, infrastructure, and roadways covering 27,800 acres. All JCNNM work is conducted on behalf of the Laboratory and the Department of Energy (DOE).

JCNNM has twelve departments, each of which has a department manager. The organization chart is shown in Figure 0-1. The larger departments have senior managers, superintendents, and supervisors which take their direction from the department managers. Each employee receives guidance from their supervisor on how to accomplish departmental objectives.



**Figure 0-1. JCNNM organizational chart.**

JCNNM holds as its highest value the safety and health of its employees, contractors, the public, and the environment. Environmental management is subject to our continuous quality improvement (CQI) program. That is, feedback on our pollution prevention (P2) and energy efficiency (E2) efforts is incorporated into our key business practices, self-reinforcing, and generates action plans.

JCNNM enables LANL to achieve its mission by providing products and services through these key business processes:

- construction
- engineering
- central maintenance
- zone operations
- institutional operations, which includes utilities

Overall JCNNM funding for FY01 was \$137.1 million.

JCNNM's mission is "world class service for world class science" (See Figure 0-2). This supports LANL's mission by providing the infrastructure for LANL divisions to perform their missions. JCNNM's organizational culture also includes a clearly articulated vision (see Figure 0-3). Building on LANL goals, JCNNM is held to meeting strict operational goals (see Table 0-1), which are called performance measures. Achievement of these 31 performance measures are the basis for the fee that LANL awards to JCNNM each year. The mission, vision, values, and goals all include a focus on customers, efficient operations, and a safe work environment.

<b>Los Alamos National Laboratory Mission</b>
Reduce the global nuclear danger
<b>JCNNM Mission</b>
<i><b>World Class Service for World Class Science</b></i>

Figure 0-2. The JCNNM mission supports LANL's mission.

<b>JCNNM Vision</b>
<i><b>We will safely perform our work with such enthusiasm, responsiveness, cost-effectiveness, quality and craftsmanship, that we will be our customer's provider of choice. Our efforts will enhance the quality of life for ourselves, our families, and our neighbors through meaningful work and new opportunities, now and into the future.</b></i>

Figure 0-3. The JCNNM vision.

**Table 0-1. JCNNM performance measures align with LANL goals and derive from JCNNM values.**

LANL Goals	JCNNM Values	JCNNM Performance Measures
Safety First!	An injury- and incident-free workplace	OSHA total recordable incident rate of 3.3; Lost and restricted workday cases of 1.8
Productivity and Strategic Business Development	Enduring partnerships with our customers; Quality service and craftsmanship	Work scheduling efficiency goal
Embrace Diversity	Teamwork; Each individual, their uniqueness and their success	None
Corporate Citizenship	Social responsibility	Economic development creation of 350 new jobs Environmental stewardship reduction in waste generation

In FY01, JCNNM employed about 1500 people. Of these, approximately 1100 are craft people employed through one of the 13 unions that comprise the JCNNM workforce.

JCNNM does not interface with federal regulatory agencies directly, but interacts with LANL groups that are responsible for such interaction. Federal regulatory agencies with environmental oversight for various LANL operations include the Environmental Protection Agency (EPA), the DOE, and the Nuclear Regulatory Commission (NRC). The New Mexico Environment Department (NMED) also oversees and regulates LANL activities.

In addition to regulatory expectations, JCNNM operations are shaped and evaluated by performance measures negotiated with LANL. These requirements, revised annually, provide a broad range of specific goals, measures, and evaluation criteria. Performance measures serve as key methods of determining both customer expectations and organizational performance. There are environmental performance measures for Clean Air Act compliance, Resource Conservation and Recovery Act compliance, and reduction in waste generation. There are also safety performance measures for OSHA recordable incident rate, lost and restricted workday cases, safety assessments, and radiation protection of workers.

## 0.2 Customer and Stakeholder Requirements

LANL is the primary customer for JCNNM. Other minor customers include Los Alamos County and the New Mexico Environment Department, which use the services of the Environmental Laboratory. All products and services are designed, either directly or indirectly, to carry out that portion of LANL's mission assigned to the support services contractor. JCNNM has identified the additional broad groups of customers:

- LANL operating divisions
- JCNNM employees
- stakeholders such as the University of California (UC), DOE and the surrounding communities and pueblos

Each group of customers has a specific set of environmental expectations for JCNNM, as Table 0-2 shows. Those expectations also include a general commitment to safe operations and efforts to minimize sanitary waste generation and consumption of resources.

**Table 0-2. JCNNM key customer segments and requirements related to environment.**

<b>Customer Segment</b>	<b>Key Environmental Requirements</b>	<b>Determined by</b>
LANL Operating Divisions	<ul style="list-style-type: none"> <li>• Use good business practices (cost effective, timely, productive)</li> <li>• Help LANL meet key environmental goals</li> </ul>	<ul style="list-style-type: none"> <li>• Performance Measures</li> <li>• LANL goals</li> </ul>
JCNNM Employees	<ul style="list-style-type: none"> <li>• Provide a safe and healthy work environment</li> <li>• Help LANL meet key environmental goals</li> </ul>	<ul style="list-style-type: none"> <li>• Performance Measures</li> <li>• EPA and NMED requirements</li> </ul>
Stakeholders (DOE, UC, the general public)	<ul style="list-style-type: none"> <li>• Use good business practices (cost effective, timely, productive)</li> <li>• Help LANL meet key environmental goals</li> </ul>	<ul style="list-style-type: none"> <li>• Performance Measures</li> <li>• DOE Orders</li> <li>• EPA requirements</li> </ul>

In addition to performance measures, JCNNM uses a variety of institutional systems to structure operations. JCNNM's adoption of LANL's Integrated Safety Management (ISM) system, in its broadest definition, serves as a basis for the institution's environmental management system (see Item 1.1). JCNNM's performance review system (see Item 5.1) helps leaders establish clear performance expectations for employees and ensures those expectations are aligned with organizational goals and values.

### **0.3 Supplier and P2E2-Partnering Relationships**

Fourteen percent of JCNNM's \$137.1 million operating budget is for the acquisition of goods and services necessary for its operations. JCNNM's Business Operations Department (BUDO) is responsible for the oversight of these major subcontracts. JCNNM's key suppliers are the approximately 26 vendors managed by the Just-In-Time (JIT) Program, which accounts for 50 % of all institutional procurement transactions annually, and the labor subcontract companies who provide additional personnel to the workforce.

BUDO manages all supplier relationships under terms of the supplier contracts and as required by the supplier process. Because key suppliers' performance directly affects JCNNM, quality expectations and performance requirements are clearly communicated. BUDO representatives meet frequently and regularly with supplier representatives to evaluate performance and provide systematic, detailed feedback.

In many cases, these JIT product and labor contracts do not contain an environmental component. Where applicable, BUDO affirmative procurement experts ensure that routine products, such as office supplies, conform to any applicable environmental provisions such as recycled content.

JCNNM subcontracts all its environmental support to Eberline Services. These personnel are responsible for ensuring that JCNNM complies with the environmental regulations and they spearhead the pollution prevention program for JCNNM.

### **0.4 Competitive Situation**

JCNNM is the sole support services contractor to LANL. It was selected for its five- year contract from several other companies. However, for individual projects that JCNNM may perform, facility managers are free to choose outside vendors if desired. Therefore, JCNNM must provide quality service for a cost-effective price.

### **0.5 Strategic Context**

Recent improvements to the institutional ISM System (see Item 1.1) allow JCNNM to identify most of its significant environmental issues. Similarly, the ISM System allows JCNNM to focus on key LANL issues related to the environment.

JCNNM is also participating in several pollution prevention strategies recently implemented across LANL:

- recycling of unwanted mail through a process coordinated by mail services
- paper reduction through double-sided copying, use of recycled paper, and use of electronic documents
- general recycling through increased emphasis on awareness programs
- energy efficiency through awareness and improved equipment purchases
- development of pollution prevention goals with LANL
- Analysis and feedback through lessons learned

# 1 Leadership

## 1.1 Organizational Leadership

The general manager, deputy general manager, and department directors make up the senior leadership team. They have established a policy that strives to foster a culture that is founded on a “zero accidents/incidents” philosophy. This philosophy is based on the understanding that all accidents/incidents and accidental environmental discharges are preventable and are unacceptable. JCNNM managers guide the organization by advocating uncompromising safety, by promoting P2E2 and resource conservation, by modeling corporate citizenship, and by recognizing and rewarding innovation and efficiencies in productivity.

The integrating framework that JCNNM and LANL use as an environmental management system is ISM. The broad definition of “safety” encompasses all aspects of environment, safety, and health—including P2E2 and waste minimization (see Figure 1-1). The term “integrated” is used to indicate that the safety management system is a normal and natural element of the performance of work: safety isn’t a workplace addition, it is how JCNNM does business. ISM is a continuous improvement process that analyzes performance and makes improvements on that performance. ISM supports JCNNM’s goal to accomplish its mission cost-effectively while striving for an injury-free workplace, minimizing waste streams and avoiding adverse impacts to the environment from its operations. ISM implementation is a major emphasis at JCNNM, and senior leaders formally review progress toward full implementation annually. Each year, JCNNM leaders review their ISM implementation plan for the company that ties directly to the overall LANL ISM plan. ISM implementation is discussed at monthly meetings of the Safety Leadership Team (SLT). The SLT is comprised of a representative from each department’s SLT. There are also representatives from LANL’s RRES Division, FWO Division, facility management team, security force, and DOE to facilitate discussion about safety issues with JCNNM’s stakeholders. The SLT fosters a better safety culture, helps review accident trends and identify root causes, sets safety goals, and responds to safety issues raised by employees.



Figure 1-1. LANL’s five-step process for ISM, adopted by JCNNM.

JCNNM’s management system is based on frequent and open communication. Managers meet twice weekly to status issues and receive information from the general manager. Managers meet monthly to discuss JCNNM’s status in achieving performance measures. Performance modifications that are needed to ensure that the measures are met are communicated to the worker through the supervisors and superintendents.

These sessions focus on expectations and progress toward goals, as well as environmental, health, and safety issues. For example, waste management is a frequent topic at these meetings. In addition, senior managers review action plans for

all projects, including process improvement efforts, to ensure work is being completed as scheduled and budgeted or to determine necessary adjustments to the plans.

Senior leaders also conduct regular management walkarounds. These informal but structured reviews allow leaders to observe working conditions throughout their areas of responsibility, to talk informally with employees, and to note potential areas for improvement. Each JCNNM manager is expected to complete four hours of management walkarounds each week.

JCNNM managers are responsible for effective environment, safety, and health (ES&H) performance in their facilities and work under their control. In order to discuss ES&H performance with their employees, managers conduct biweekly departmental ES&H meetings. Occasionally, members of the safety or environmental staff speak at these meetings to cover specific topics. The environmental staff that helps JCNNM employees with environmental issues is part of the Environment, Safety, and Health Department (see Figure 0-1). P2 personnel are part of this environmental staff and they perform monthly reviews of waste data. In addition, JCNNM has an environmental management system (EMS) team with representatives from each department that helps implement the environmental program.

JCNNM also maintains an internal web site with a wide range of detailed available information for employees and LANL customers. One key part of the web site is the Health, Safety, and Environment (HSE) Manual (see Figure 1-2).

### ***HSE Manual***

#### ***ENVIRONMENTAL SECTION***

- E-2 Clean Air Act Compliance***
- E-3 Drum Storage, Handling, Labeling, and Disposal***
- E-6 Environmental Penalty Assessment***
- E-7 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)***
- E-8 Fluorescent, Incandescent, and High Intensity (HID) Lamp Transportation***
- E-9 Handling, Packaging, Storage and Transporting Unusable Batteries***
- E-10 Hard Stand Cleaning for Concrete, Asphalt, or Paved Surfaces***
- E-11 Hazardous Waste Generation, Management, and Disposal***
- E-12 Lead Handling and Storage***
- E-13 Liquid Waste Management and Disposal***
- E-15 Polychlorinated Biphenyls (PCB) Management Program Summary***
- E-16 Potable Water, Steam Condensate & Line Discharges***
- E-18 Solder Scrap Recycling***
- E-19 Spill Prevention, Control and Countermeasures***
- E-20 Spill Reporting and Response Procedure***
- E-21 Stormwater Discharge From Secondary Containment***
- E-22 Underground Storage Tanks***
- E-23 Used Oil Management***
- E-24 Waste Minimization and Pollution Prevention***
- E-25 Solid Waste Management***
- E-26 Refrigerator Recovery/Equipment Inventory***

**Figure 1-2. Part of JCNNM's HSE Manual web page.**

JCNNM is fully committed to continuous improvement of all its operations. JCNNM strives to foster a culture founded on continuous quality improvement, which strives to achieve the "zero accidents/incidents" philosophy. Such improvements usually include, either directly or indirectly, a reduction of waste generation or a decrease in needed

resources. The E2 ethic is gaining prominence at JCNNM. Management provides leadership to its workforce in this area by providing staffing and support to promote its environmental management system.

JCNNM managers set organizational direction at annual strategic planning sessions (see Item 2.1). These sessions include a review of data and evaluation of past performance, including safety and environmental performance. The JCNNM performance measures, action plans, and targets derive from the needs and expectations of all key customer groups as determined from LANL goals.

Senior leaders communicate goals and action plans to employees through departmental meetings. In addition, the JCNNM management team reviews progress towards performance measures monthly.

The planning process used by JCNNM managers employs a line-of-sight process from high-level organizational goals to individual performance expectations. Managers work cooperatively with employees to identify how each individual in the program is expected to contribute to the vision.

## 1.2 Community Leadership

Because it is a subcontractor of the larger LANL organization, JCNNM has limited interaction with the public related to environmental issues. LANL has designated the Community and External Relations Division to routinely handle interactions with the public. Presentations, discussions, and workshops specifically focused on environmental issues are typically coordinated through LANL's Risk Reduction Environmental Stewardship (RRES) Division. Other community interactions take place through the many integrated outreach programs of LANL. JCNNM is represented in all of these institutional outreach activities. JCNNM is represented in several outreach activities including committees involving DOE, LANL, and Los Alamos County, such as the joint Water Quality Steering Committee and the LANL Water Conservation Committee.

JCNNM presents environmental results at various professional conferences including the New Mexico Environmental Health Conference, the Rocky Mountain District of the American Water and Wastewater Association, and the Joint Services P2 and Hazardous Waste Management Conference. Also, JCNNM frequently updates LANL's Environmental Stewardship Office (ESO) and the DOE regarding P2 activities.

BUDO department is the JCNNM entity responsible for interacting with subcontractors and other resource and service providers. Thus, that department reviews and approves all sub-contracting plans (including environmental requirements as appropriate) and tracks the performance of JCNNM contractors. A key aspect of JCNNM procurement is to support local vendors whenever possible, especially small businesses and those owned by minorities and women. In FY01, about 80% of JCNNM outsourcing was to small business.

JCNNM also tracks its performance in regards to the purchase of environmentally friendly products and items with recycled content. In FY01, JCNNM purchased recycled content items for 83% of the EPA-designated items purchased.

JCNNM also contributes to LANL's highly successful environmental initiative, Mail Stop (MS) A1000. This is an effort to recycle unwanted junk mail and other printed material. JCNNM employees re-address unwanted mail to MS A1000 and LANL mail delivery personnel collect and sort the material as part of their normal mailroom activities. In 2001, the program recycled over 50 metric tons of material. This program has received wide publicity both inside and outside LANL and in 1999 received a White House Closing the Circle Award. The Closing the Circle Program, now in its sixth year, recognizes federal employees and their facilities for efforts that result in significant positive impacts on the environment in waste prevention, recycling, affirmative procurement (purchasing recycled products), environmental preferability, model facility demonstrations, and sowing the seeds for change.

JCNNM has a performance measure with LANL for economic development, which includes a base goal of creating 350 new jobs in FY02. In past years, JCNNM has been very successful in creating jobs in northern New Mexico, creating 128 jobs in FY01. It created a Northern New Mexico Business Park in 1999, which has 7500 square feet of office space and 3000 square feet for a commercial kitchen to help food vendors develop their businesses.

## 2 Planning for Continuous Environmental Improvement

### 2.1 Strategic Planning for Environmental Improvement

For its planning and improvement process, JCNNM has developed and uses as a guiding blueprint the Annual Management Plan. This plan discusses accomplishments of the previous fiscal year, discusses the planning process and management controls, and provides an interdepartmental overview of improvements, upcoming activities, and plans for the fiscal year. JCNNM also develops a Strategic Plan that includes strategic and tactical goals for each fiscal year. The Strategic Plan is developed by analyzing the strengths, weaknesses, and opportunities that JCNNM encounters in performing its services for the Laboratory.

In addition to the Annual Management and Strategic Plans, JCNNM actively participates with LANL in developing performance measures for each fiscal year. The performance measure process involves subject matter experts who identify and set priorities for JCNNM's environmental performance. This approach has allowed JCNNM and LANL to work together on many mutually beneficial projects.

Further, this year JCNNM performed the ISO 14001 planning process, which includes identifying environmental aspects and creating draft targets and objectives for environmental improvement efforts. The goals established by this process were then assigned to JCNNM departments, as appropriate, for implementation, reporting, and tracking. (Item 6.2 identifies the overall institutional process for environmental improvement.)

Figure 2-1 gives an overview of the JCNNM strategic planning process, which includes input from each of the following in the hierarchy of goals:

- JCNNM's Mission, Vision, and Values
- JCNNM's Strategic Plan
- Performance measures (see Item 3.1)
- Tactical goals
- Program plans and results from process improvement efforts (see Item 6.2)
- Departmental plans
- Operational activities, as documented by management walkarounds (see Item 1.1)

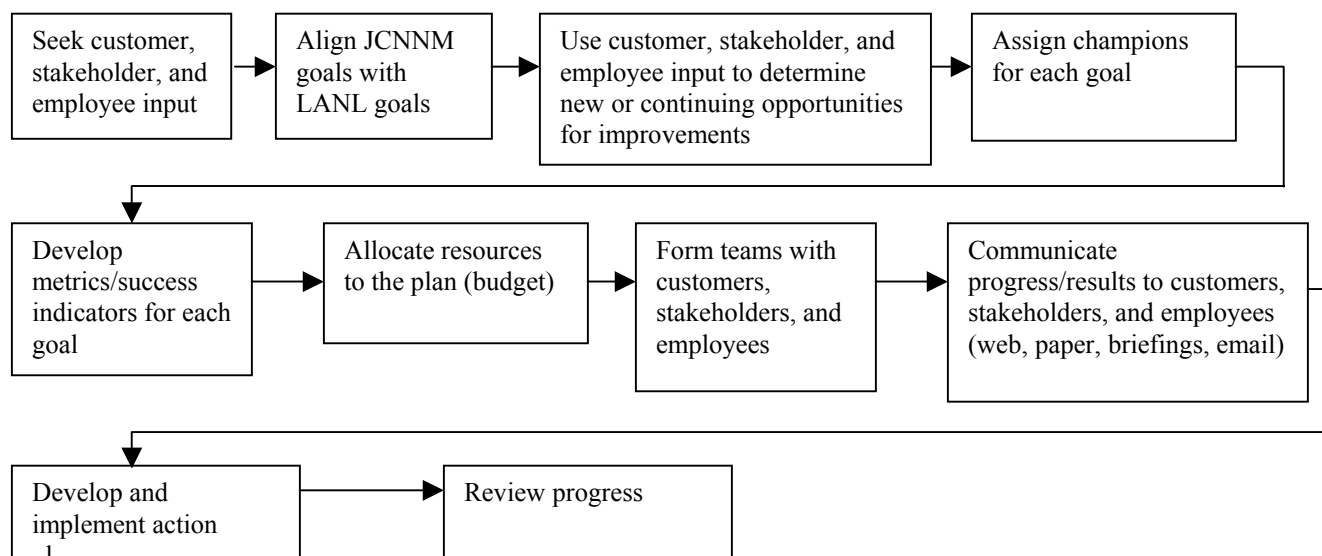


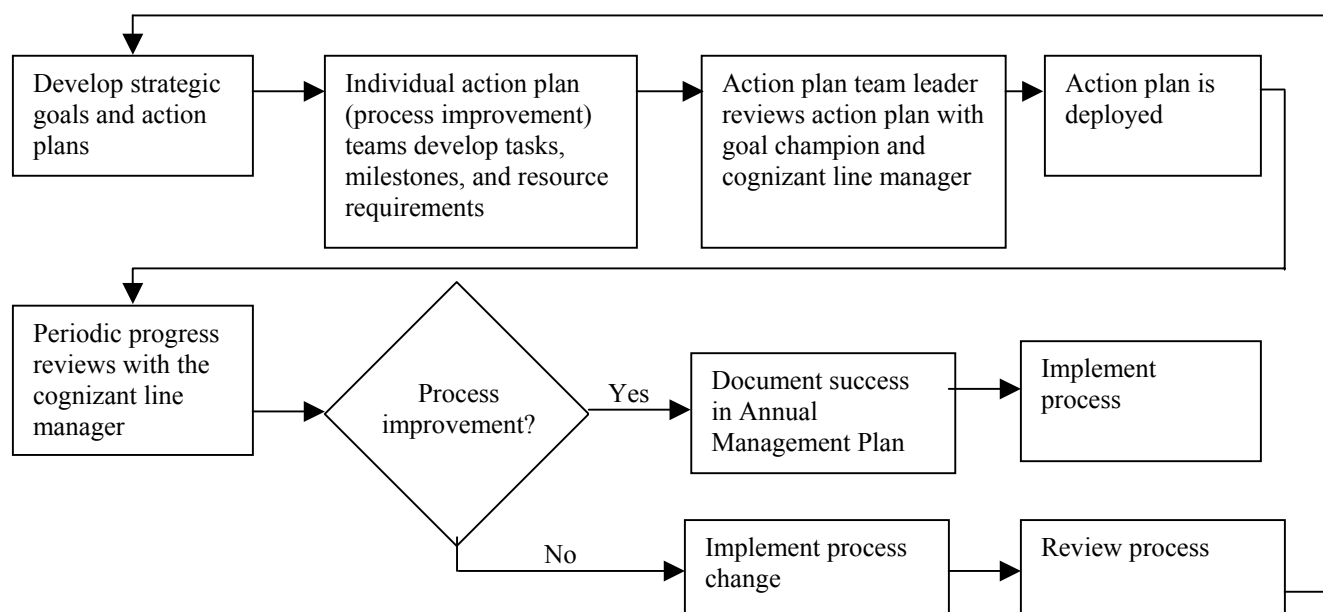
Figure 2-1. JCNNM's strategic planning process.

In addition, through senior leaders' negotiations and assessments with LANL, JCNNM managers get a clear perspective of how stakeholders view its performance.

JCNNM incorporates compliance with ES&H drivers into the environmental management process through the environmental organization, HENV, which is part of the HSEO Department (see Figure 0-1). This organization helps the JCNNM operating departments interpret environmental requirements for the activities that they perform.

## 2.2 Action Planning

After identifying tactical goals, JCNNM develops P2E2 actions, targets, and measurements of success, as shown in Figure 2-2. Because managers and employees recognize that inefficiency leads to waste, there is an ongoing effort to improve operations. Item 6.2 describes the method by which key processes are analyzed and improved. These improvement efforts include action plans, which are regularly reported to management and tracked for successful completion.



**Figure 2-2. JCNNM's process for deploying and tracking action plans.**

JCNNM uses the Green Zia tools to analyze its major waste streams and develop action plans to eliminate or reduce them. JCNNM has process mapped several of its waste generation processes, including aerosol cans, lacquer thinner, paint stripper, road striping, and spill wastes. After performing activity-based costing and root cause analysis of the waste problem, team members developed alternatives for improvement. These alternatives were then prioritized and developed into action plans that have been implemented to reduce the volume of the waste stream.

Although JCNNM consistently uses the Green Zia tools to improve environmental performance, participation in the New Mexico Green Zia Environmental Excellence Program and submission of this application is a new focus. Submission of this award application is part of an ongoing effort to more effectively and systematically focus on improving environmental performance.

JCNNM involvement in the Green Zia Environmental Excellence Program has also led to an increased awareness of environmental concerns across the organization. Additionally, JCNNM's annual self-assessment and implementation strategy for ISM focuses on how to involve all employees in making environmental improvement a routine part of all operations. In combination with the leadership systems previously described, these efforts also contribute to the development and execution of action plans.

The HENV group is responsible for assessing action plans with a view to achieving regulatory compliance, risk reduction, and P2. The group's recommendations are incorporated into the planning process at the points corresponding to the first three boxes identified in Figure 2-2.

## 2.3 Integration and Implementation

Senior leaders formally review the action plans monthly to ensure that JCNNM is making appropriate progress and report this progress through group meetings. Every six months, JCNNM performs a formal analysis of the status of the performance measures and presents a report to LANL. The planning process allows managers to closely tie both strategic and tactical activities to budget submissions and to plan for most effective movement of staff to meet requirements. Priorities established in the strategic plan become the drivers in resource allocation in the budget process. The quarterly reviews allow managers to track resource allocations and to make any necessary adjustments to either funding or human resource allocations.

## 3 Customer, Supplier, and Others Involvement

### 3.1 Customer Involvement

As discussed in the overview, JCNNM is an organization committed to providing services to LANL. As JCNNM improves its environmental performance, its services will become more attractive to potential LANL customers.

Just as frequent and open communication marks JCNNM's internal management practices, so does it characterize interactions with customers and stakeholders. JCNNM is highly conscious of the need to fully involve all affected parties in seeking to improve the efficiency of work and demonstrating an environmental excellence ethic in daily operations.

The performance measures on which JCNNM is evaluated provide clear expectations, increase accountability, and improve customer relations by addressing performance issues that concern LANL. These performance measures determine customer requirements and performance levels for all of JCNNM's departments. JCNNM's performance measures contain goals in thirty-one categories for evaluation. Table 3-1 shows a number of relevant performance measures of specific interest. JCNNM performance is included in several of the measures directly related to environmental excellence.

**Table 3-1. Relevant performance measures.**

Functional Area	Measure	Focus
Maintenance	5	Productivity
Maintenance	9	Preventive maintenance accomplishment
Construction	13	Customer satisfaction
Utilities	20	Customer satisfaction
Clean Air Act	25	Compliance
Resource Conservation and Recovery Act	26	Compliance
Waste	28	Waste reduction
Economic development	31	Job creation

The waste reduction goals that JCNNM meets helps support the LANL pollution prevention goals for waste, which are part of the LANL contract with the DOE. The negotiation steps for the performance measures, the process to set priorities, the improvement steps, and the resulting evaluations all help focus JCNNM resources on key business processes and improve operational quality. The performance measures are evaluated biannually and a report is provided to LANL to provide progress data and claim the earned fee. Senior leaders also interact more often with LANL customers on an as-needed basis. The regular and frequent interaction helps prevent surprises, mitigate problems, and create a cooperative rather than an adversarial atmosphere.

In addition to working with LANL contract management, JCNNM has close contact with LANL's Environmental Stewardship Office (ESO) and Facility Waste Operations Division (FWO). ESO had extensive involvement in the development of the waste reduction performance measures for JCNNM and helped support environmental initiatives such as the biodiesel project. FWO is instrumental in identifying recycling options for many JCNNM waste streams, such as solvents, fluorescent bulbs, and petroleum-contaminated soil.

Another way to communicate with customers is through JCNNM's LANL-internal web site, which keeps all internal parties well informed of current and projected progress. The site contains extensive information, including departmental details and answers to frequently asked questions while minimizing paper consumption. JCNNM's use of electronic communications also encourages customers to conserve resources.

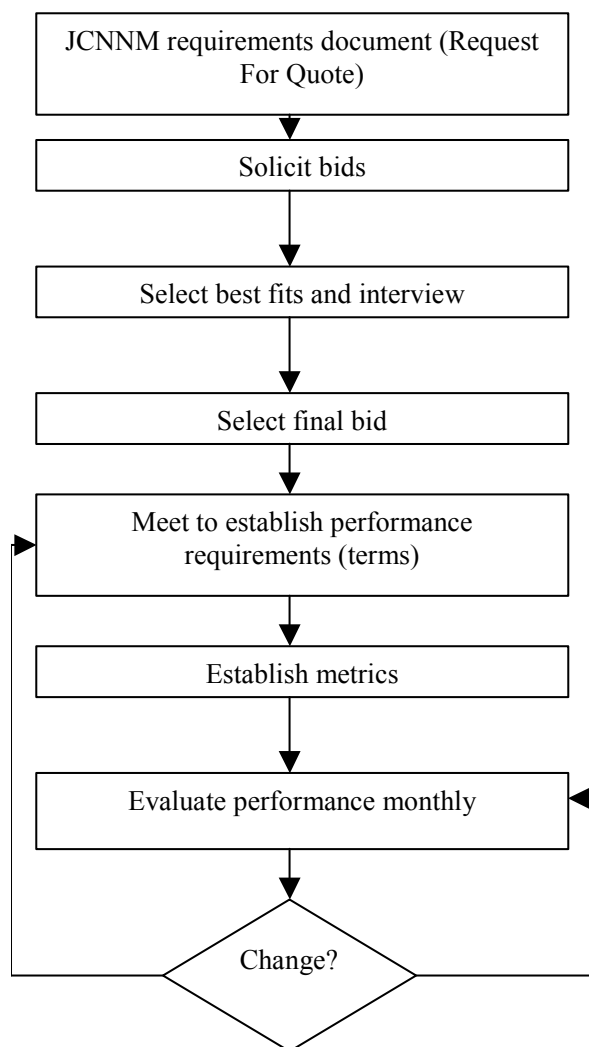
To monitor public perception, JCNNM relies on an annual survey of public opinion, which LANL has conducted since 1998. The resulting reports profile New Mexico community leaders' awareness of and satisfaction with LANL operations, of which JCNNM is a part. The survey also helps to identify current and emerging issues of importance to leaders in the region. In addition to asking about general perceptions of LANL, the survey allows respondents to voice their opinion of LANL's environmental responsibility. Results from the survey are recorded, analyzed, reviewed, and used in planning activities.

### **3.2 Supplier Involvement**

JCNNM does business with suppliers that are contracted directly with LANL, as well as those contracted specifically with JCNNM. In those instances when a supplier is contracted with LANL, JCNNM does not directly influence the supplier's contracted provisions, but often works with LANL to identify environmentally preferable contractual changes. For those suppliers contracted to JCNNM, specific supplier requirements are defined in a customized contract which is negotiated, implemented, managed, and evaluated by JCNNM procurement personnel before being sent over to a LANL buyer. Procurement is also responsible for evaluating the overall performance of suppliers. Figure 3-1 shows the JCNNM contracting process.

JCNNM includes several environmental considerations such as energy efficiency in procuring equipment, supplies, and maintenance contracts. For example, JCNNM now ensures that all new computers are equipped with Energy Star, an energy saver function that turns off the monitor's screen when the computer is not in use. JCNNM also is making a determined effort to ensure that purchased office products, including paper, contain recycled content. To minimize the use of paper, copiers may be set to print double-sided, and new equipment will have that capability. The use of electronic messaging and a comprehensive web site also promote the minimization of paper usage.

In addition to measures to purchase recycled paper, JCNNM also has an active program to purchase other recycled content items that are designated by the EPA. JCNNM's process is to identify vendors that supply an EPA-designated item, then check with those vendors to determine their product's recycled content, and meet with them to identify the best products for JCNNM to use. For example, JCNNM is working with Dunn-Edwards, its major paint supplier, to identify paint with recycled content. Dunn-Edwards has agreed to modify its processes to get the colors and formulations needed for JCNNM applications. In addition, Dunn-Edwards is assisting in recommending latex products that will work well in oil-based paint applications. JCNNM and Dunn-Edwards are developing an agreement for Dunn-Edwards to take back excess latex paint so that it can be reformulated into product. JCNNM is also working with Dow Plumbing, the primary vendor for aluminum-jacketed insulation products to verify the recycled content of its supplied items. Dow has also recommended rock wool insulation to replace fiberglass in insulation applications because it is less energy intensive to produce and is made of recycled content material.



**Figure 3-1. The supplier management process.**

JCNNM has other environmental initiatives besides purchasing recycled content items. One of these initiatives is the use of oil sponge absorbent, which is 100% recycled material. The absorbent is used to bioremediate onsite petroleum spills, which create one of the major New Mexico special waste streams that JCNNM produces. JCNNM worked with its vendor, Desert Shield, Inc., to secure recycling bins that would facilitate the bioremediation. Kleentech, a major JCNNM subcontractor which provides janitorial services for LANL, has initiated programs to supply only green cleaners to its employees. Kleentech employees also worked on a team with JCNNM to identify carpet cleaners and floor strippers that could be disposed in the sanitary waste stream without adverse effects to the wastewater treatment plant.

### 3.3 Others' Involvement

One of JCNNM's primary methods of communicating and involving other interested parties is through participation in the New Mexico Green Zia Environmental Excellence Program. The Green Zia Program is a statewide initiative designed to encourage businesses to focus on P2E2 as a economic business advantage. Established by the 1998 New Mexico legislature, the Green Zia Program is administered by the New Mexico Environmental Alliance, a partnership of state, local, and federal agencies; academia; business and industry; and environmental advocacy groups. The basic premise of the program is that waste is the result of inefficiency and by reducing waste a company can increase its

profits. The environmental benefit is clear: waste that is never created does not pollute. Participation in the program gives JCNNM a third-party, independent evaluation of successes and opportunities for improvement in environmental performance.

JCNNM accounts to governmental agencies and the public for reportable environmental occurrences in a timely and thoroughgoing fashion by means of LANL's DOE Occurrence Reporting and Processing System. Final occurrence reports are available at <http://drambuie.lanl.gov/~esh7/Finals/> and in public reading rooms.

JCNNM is highly involved in the community with its Northern New Mexico Business Park. JCNNM has also worked closely with the Nambe Recycling facility to help develop their capabilities for recycling materials. JCNNM supports the Northern New Mexico Recycles fair, which promotes strong environmental performance.

## **4 Information and Analysis**

### **4.1 Information Collection Management**

The JCNNM performance measures (Item 3.1) are key performance indicators of contractual requirements and also measures of customer satisfaction. Managers monitor progress related to performance goals and use that information to develop and/or modify operational plans and to identify areas for improvement. Results presented in Category 7 show that environmental performance has improved over the past years. JCNNM closely monitors waste generation trends, affirmative procurement, inspection results, and accidents and injuries.

JCNNM senior managers also monitor progress toward full implementation of ISM (see Item 1.1). The ISM Project Office has established a detailed implementation schedule, available on an employee-accessible web site, and monitors all portions of LANL, including JCNNM, to ensure that milestones are achieved and that performance goals are met. A DOE audit of ISM in the fall of 1999 indicated that implementation is on track and that JCNNM efforts in this area are fully satisfactory. Using ISO 14001 as a guide to establish requirements for a robust environmental management system, ISM is being improved to include an even stronger focus on environmental performance.

JCNNM has prepared two self-assessments and one independent assessment against ISM requirements, including requirements for environmental protection. These assessments will help shape institutional priorities and will also help JCNNM identify and begin to improve its most significant environmental weaknesses. JCNNM has also issued a pocket guide and a laminated card to all employees that discusses the five steps of ISM and the seven guiding principles.

JCNNM leaders also gather data on other aspects of the company's environmental performance.

- In addition to its contribution to overall LANL performance in injury/illness prevention, JCNNM specifically measures and tracks its own performance in this area.
- This year for the first time, JCNNM will receive impartial evaluation and feedback on its environmental performance through participation in the New Mexico Green Zia Environmental Excellence Program. JCNNM senior managers will begin tracking this measure and will use identified opportunities for improvement as initiation points for remedial actions.
- Process changes save not only physical resources but also result in time and cost savings. JCNNM monitors process performance and tracks these savings.
- JCNNM tracks its generation of both routine and nonroutine hazardous, New Mexico special, and sanitary wastes
- Purchasing records are examined to determine what percentage of EPA-designated items are procured with recycled content

### **4.2 Analysis and Decision-Making**

JCNNM managers systematically analyze data to develop the information necessary for wise decision-making. The strategic planning process described in Item 2.1 forms the basis for the annual roll-up of a comprehensive set of data. The JCNNM management team formally reviews the Annual Management Plan each year. Biannually, JCNNM formally evaluates progress toward performance measures. On a more informal basis, operational data is presented and analyzed at monthly management meetings that include all leaders within the company. JCNNM managers review all the data

identified in Item 4.1 on at least an annual basis, with the majority of information being evaluated much more frequently.

The action planning process described in Item 2.2 forms the basis for a periodic assessment of progress on specific initiatives relating to P2E2 goals and partnering with employees, suppliers, vendors, and customers.

## **5 Employee Involvement**

### **5.1 Employee Education and Skill Development**

Each department has objectives that support JCNNM's performance measures and other contractual requirements. Objectives for each employee are then designed to ensure that the organizational objectives are met and that the employee has a clear view of how his or her work requirements contribute to the success of the entire organization. The system thus ensures that employees know what job results are expected, how they are expected to perform work, how their performance will be reviewed by others, the impact their contributions have on achieving the organization's objectives, and how this is tied to rewards or consequences. The performance appraisal process ensures clear two-way communication during the goal-setting phase of the process and provides a focus for ongoing discussion about work objectives and processes. Specific goals include:

- aligning individual expected results with institutional goals
- identifying and assessing individual performance results/accomplishments
- evaluating performance of institutionally defined behaviors
- describing how individuals helped to meet organizational objectives
- linking performance to rewards or consequences
- designing development plans to support improving performance in current jobs and/or increasing impact on the organization
- enhancing employee/manager ownership of individual and organizational performance
- improving two-way communication between supervisors and employees

As part of performance management, JCNNM managers also work with each employee to cooperatively prepare individual development programs—both short-term and long-term—on an annual basis. As employees and their managers work together to identify how they will contribute to JCNNM business plans, they identify the need for new skills and competencies and jointly develop a growth plan. It is then up to managers to supply the resources (time, money, and support) to enable and encourage the employee to accomplish his or her development plan. Throughout the year, the manager and employee evaluate the development and learning objectives to address changing employee and company needs.

Once developmental goals have been established, employees may participate in appropriate training offered by JCNNM or other LANL organizations. LANL's ESH Division offers over forty courses related to environmental issues, from general safety training and first aid to courses on such specific topics as packaging and transporting hazardous materials. Training may be used to improve skills needed for current job performance or to develop new capabilities.

Training programs are a key component to assuring actions by workers that reflect integrated plans. Training generalists from JCNNM's Performance Improvement Department (PIDO) work with departmental managers and employees to identify specific training requirements for work being performed, establish appropriate programs, enhance quality, and assure continuity between all aspects of training. Training on standardized practices such as emergency operations is conducted on a LANL-wide basis. Site- and task-specific training is also provided for JCNNM projects and facilities.

PIDO has developed formalized methods to solicit feedback from training participants, to evaluate that input, and to use it for continuous improvement of training.

Communication, cooperation, knowledge, and skill-sharing among individuals and teams is accomplished through regular safety meetings and participation on teams, such as the Green Zia teams.

## 5.2 Employee Involvement

A major emphasis in JCNNM is that every employee understand his or her role in achieving organizational goals, including those related to P2E2 performance. For example, the ISM implementation strategy developed for JCNNM emphasizes employee understanding and involvement. JCNNM senior managers offer employees a wide variety of ways to have an influence on how the company conducts business. Managers have an open door policy and employees are encouraged to express their opinions at biweekly safety meetings.

JCNNM employees also take advantage of institutional mechanisms to minimize waste. For example, when employees have supplies, equipment, and materials that are no longer needed, the property administrator assigned to JCNNM can ensure that it is re-used. Employees can also advertise unused equipment on the LANL electronic Swap Shop, where excess property is made available to the rest of LANL.

Senior managers ensure that JCNNM's human resources are properly aligned to carry out proposed action plans. The alignment process begins with the annual strategic planning update. Leaders develop long-term priorities and projections and ensure that adequate resources are available. As projects evolve, leaders use quarterly or monthly reviews of action plan progress to ensure that resources continue to be adequately aligned.

JCNNM managers communicate environmental information in a variety of ways. In addition to the normal flow-down of reports through regular group meetings, managers devote specific attention to discussing performance measure reviews.

One key process by which JCNNM employees actively address community environmental issues is through coordinated volunteer efforts. Although volunteer opportunities include a wide range of activities, from tutoring to foster care, many are focused on environmental issues. For example, following the Cerro Grande Fire in May 2000, many JCNNM volunteers donated weekends to help with recovery efforts.

Finally, employees are key members of JCNNM's Green Zia teams. As a team defines and analyzes an environmental issue, it is most often the employees who identify root causes and appropriate process changes to eliminate waste and other environmental impacts. For example, it was JCNNM's Heavy Equipment Shop manager who identified the root cause for most of JCNNM's petroleum spills (hydraulic line end fitting failures), proposed the solution (upgrading to steel end fittings), and implemented the action plan. Additionally, JCNNM painter foremen identified and implemented greener products for paint striping and steel cleaning. In these examples, JCNNM environmental personnel facilitated the Green Zia tools process, but it was the process owners who made the projects successful.

## 5.3 Employee Satisfaction, Value, and Well-being

JCNNM supports a safe work environment for employees and ensures that employees perform work safely and in an environmentally friendly manner by building on safety programs such as ISM. The ISM program assists JCNNM managers in conducting monthly walkarounds in their areas, looking for and correcting ergonomic concerns and work area hazards such as obstructed walkways, improper electrical usage, and violations of forklift safety or hazardous material handling. Safety also includes safety for the environment, and managers may choose to conduct walkarounds focused specifically on environmental issues. The ISM database tracks safety and environmental deficiencies identified during walkarounds until the deficiencies are resolved and compiles the deficiencies to identify and improve safety performance. Furthermore, managers meet with employees to discuss individual safety commitments and hazards identified with each job.

JCNNM has a Voice of the Employee (VOTE) program to allow employees to make suggestions and voice opinions and concerns about JCNNM operations. This suggestions are forwarded to a committee, which evaluates it and decides who in JCNNM is responsible for responding to the suggestion. The employee is provided feedback on any actions taken in response to the suggestion. This program expresses JCNNM's value for employees' opinions.

There are also institutional incentives to encourage staff to work smarter and utilize innovative approaches to accomplish their work. The Pollution Prevention Awards Program, sponsored by LANL's ESO, is open to all JCNNM employees and JCNNM personnel have won 36 P2 Awards in the past four years. This awards program is designed to encourage individuals and teams to develop and implement plans, programs, or ideas for minimizing waste; conserving water, electricity or natural gas; reducing air or water pollution; or procuring products with recycled content. Recipients of the awards receive recognition and a cash grant from specially allocated congressional funds.

Another incentive program for JCNNM employees is the Fast \$50 program. This program allows supervisors to nominate their employees for a quick reward if they come up with a cost saving initiative or other improvement. These improvements may concern safety or environmental issues, such as suggesting a way to keep a project from impacting the environment.

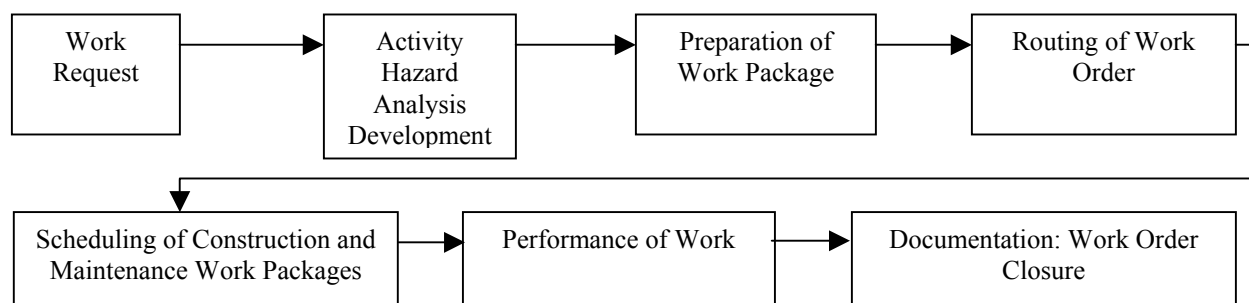
To provide emotional support, JCNNM provides an Employee Assistance Program (EAP) whose main goal is to assist employees with personal problems that are affecting their job performance. The EAP also offers a wide variety of presentations and workshops on such topics as stress management, gender issues, conflict resolution, and smoking cessation. The EAP also makes available a collection of books, videos, and audio tapes on workplace issues. The program is available free of charge. Usually employees refer themselves; however, a supervisor can refer an employee if job performance has been identified as a problem.

For employees' physical well-being, LANL maintains a Wellness Center that JCNNM employees may use. The center offers equipment and specific areas for weight training and aerobic exercise in individual and group formats. Use of the center for individual exercise programs is offered free of charge. The center also provides, usually for a small fee, a wide variety of exercise and health programs including stress management, healthy eating, aerobics, yoga, and cardiovascular fitness. The center offers individual fitness evaluations for a nominal fee. The center monitors daily use numbers and has completed user satisfaction surveys along with participant evaluations.

## 6 Process Management

### 6.1 Process Characterization and Control

JCNNM manages all of its projects for LANL through a work control process. There are work orders set up for long-term projects, such as ongoing radioactive stack monitoring, as well as for short-term projects, such as installing a sewer line from a new building. The work control process is outlined in Figure 6.1.



**Figure 6-1. The work control process**

The work control process begins when a facility manager generates a work request for some facility maintenance or a construction project. Part of the work request is an ESH Site Hazard and Control Form that lists the environmental impacts and site hazards of the work. Examples of environmental impacts are

- Potential disturbance of a watercourse;
- Water discharge;
- Air emissions; and
- Change in existing waste streams or generation of hazardous waste.

For new and modified construction projects, facility managers must fill out an ESH-ID form, which goes into further detail about the various environmental impacts of a proposed project. The ESH-ID form is reviewed by subject matter experts, who provide comments to the facility manager about the environmental requirements of the project.

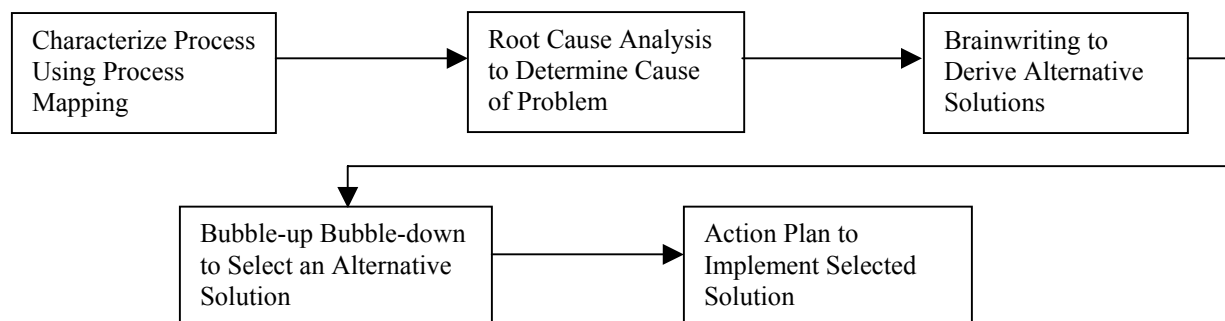
After the project is scoped, an activity hazard analysis (AHA) is developed, in order to ensure that the work is performed safely. The AHA contains the principal work steps, task hazards identified for each work step, specific controls for each hazard identified, required permits, and required training for the workers on the project. The work package is prepared by compiling equipment required, design drawings and specifications, and the required skills for the workers. The work order is routed through the Performance Assurance Department (PADO) and then the scheduler allocates the resources for the job and schedules the work with the facility manager. Before the performance of the work, the manager will give a pre-job briefing, which includes a review of the hazards and their controls, the tasks involved, the responsibility of the worker for their personal safety, the responsibility to stop work if there are safety concerns, required permits, and identification of the key personnel for the project. Workers perform the work safely, with management checking the progress of the work. When the job is done, management reviews the work package to ensure the required documentation is completed.

In addition to the work control process, formal operational assessments occur during semiannual reviews (see Item 4.2; also see Items 2.1 and 2.2), but leaders may also consider operational performance at any management meetings. JCNNM leaders use the wide variety of data described in Items 2.1, 2.2, and 4.1—including P2E2 data from customers, employees, and operational reviews—to assess the performance of key processes. Customers, including both JCNNM employees and JCNNM managers, are intimately involved in process evaluations. Employees provide operational evaluations through their input to management. LANL stakeholders are active participants in establishing performance expectations and in evaluating operational achievement through the performance measure process (see Item 3.1).

## 6.2 Process Improvement

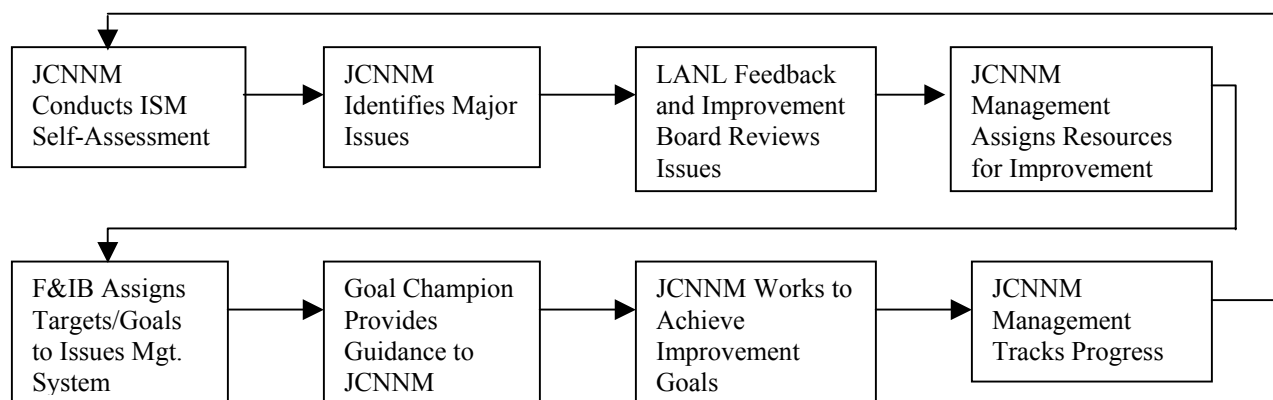
JCNNM has a contractual mandate to continuously monitor and analyze processes for potential improvements. Use of the performance measures as a framework for process analysis and comparative evaluations is a mature system that has yielded significant improvement in most areas reviewed.

Another major tool used to implement process improvement is the use of the Green Zia tools. As discussed in Item 2.2, JCNNM has used the tools to perform process improvements on eight waste streams and several more projects are currently in process. Green Zia tools include process mapping, root cause analysis, activity-based costing, brainwriting, and bubble-up bubble-down alternative ranking to facilitate process improvement. Brainwriting is a form of brainstorming that has participants write ideas down on forms that are circulated among the participants. Bubble-up bubble-down is a system of ranking where two ideas are paired and the best idea is chosen to go to the top of the list, or bubble-up, while the other idea moves down the list, or bubble-down. Figure 6.2 summarizes the Green Zia tools process.



**Figure 6-2. Green Zia tools analysis for process improvement**

In addition to the analysis and improvement carried out for the performance measures, JCNNM uses the LANL framework of annual ISM self-assessments to identify significant environmental performance issues. See Figure 6-3 for an outline of this improvement process. This framework requires each division, including JCNNM, to assess its environment, safety, and health performance. Findings are institutionally reviewed by the LANL Feedback & Improvement Board (F&IB), which sets improvement priorities and goals. The F&IB then provides institutional guidance for improvement efforts to all LANL organizations. At JCNNM, management becomes responsible for providing necessary resources to achieve improvement targets and for monitoring progress toward goals.



**Figure 6-3. JCNNM's improvement process based on the LANL ISM annual self-assessments**

Results from improvement efforts and compliance success are communicated to senior leaders at management sessions and as part of the performance measure semiannual assessments. Employees learn about process improvements through group meetings and web sites.

LANL learns of results through formal institutional lines of communication, and other stakeholders (vendors, the community) are informed through LANL contacts or by means of public affairs initiatives. Annual publications also provide stakeholders with yearly updates on environmental performance. *For the Seventh Generation : Environment, Safety, and Health at Los Alamos National Laboratory* is an annual report prepared specifically for residents of communities surrounding LANL. The *Site-Wide Environmental Impact Statement Yearbook* is another publication that evaluates LANL environmental performance and tracks progress toward established goals. Both reports feature JCNNM activities.

## 7 Results

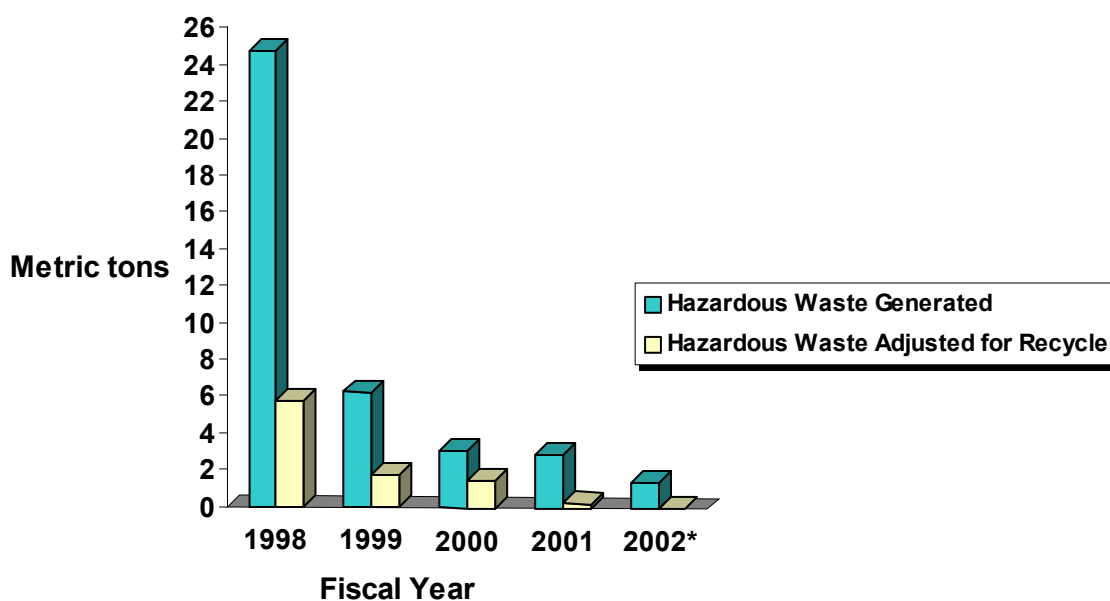
### 7.1 Environmental Results

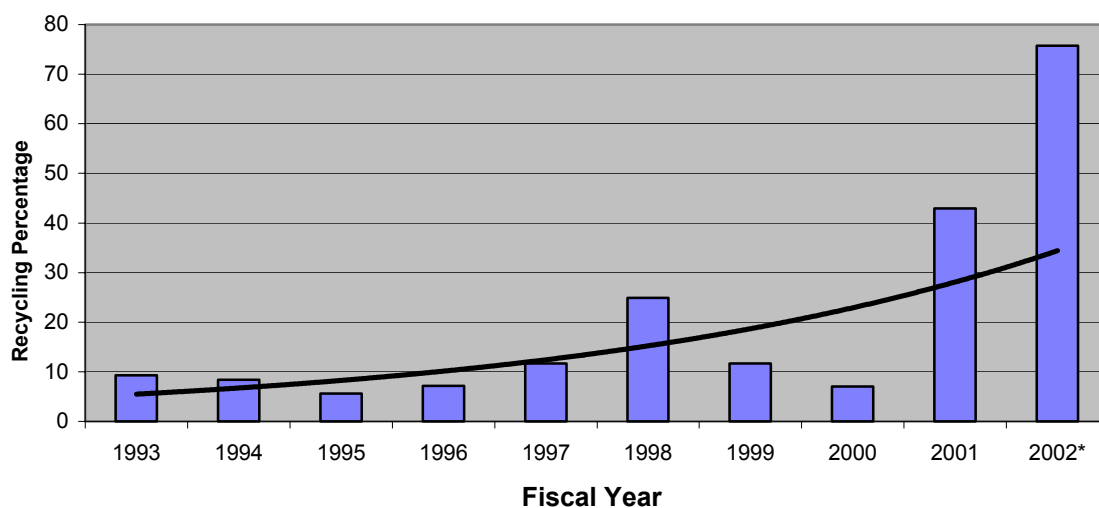
JCNNM has had steady improvement in environmental performance over the course of its contract, which has been in place since October 1997. One of the major ways that JCNNM has improved its performance is by reducing the amount of waste generated during its operations. Although the amount of work JCNNM does has increased in the last few years, the amount of waste generated has been reduced by nearly 90 percent. Figure 7-1 shows JCNNM's RCRA hazardous waste generation rate since DOE FY 1998. In general, these results have been achieved through a series of source reduction and process improvement projects.

\*projected

**Figure 7-1. JCNNM reduction in hazardous waste generation**

JCNNM is the recycling contractor for LANL, which is a primary way that JCNNM reduces LANL's sanitary waste stream. Figure 7-2 shows the increase in the percentage of sanitary waste that is being recycled over the course of the past few years. In FY 2001, JCNNM instituted an inspection program that ensures that no recyclable materials are in government shipment to the Los Alamos County Landfill. Also, JCNNM instituted a program that aggressively recycles construction asphalt, soil and concrete.

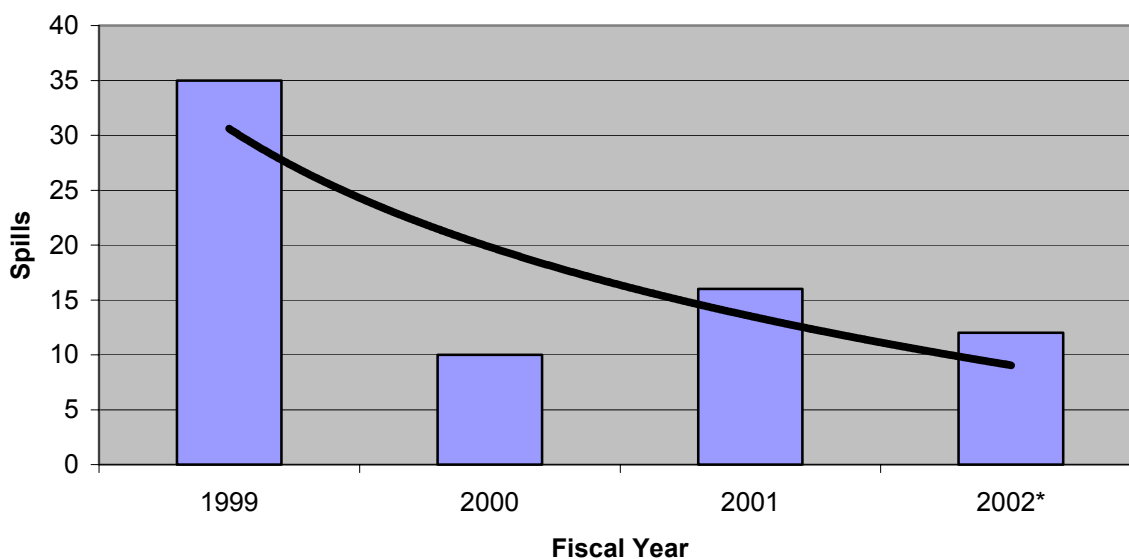




\*to date

**Figure 7-2. Percentage of LANL's Sanitary Waste Recycled by JCNNM**

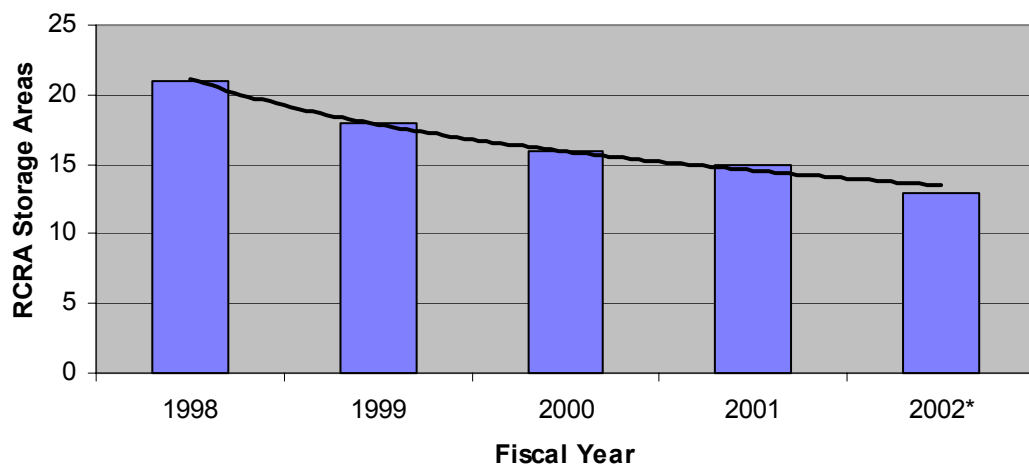
Since FY 1998, JCNNM's largest regulated waste stream has been contaminated by petroleum spills from heavy equipment. JCNNM formed a Green Zia team to address the spills problem in FY 2000. While we do not yet have clear data on the effect this has had on waste generation, the number and severity of spills have been significantly reduced (Figure 7-3).



\* projected

**Figure 7-3. JCNNM number of spills**

Another indicator of waste reduction is the number of RCRA compliance sites, or storage areas. As the total amount of waste has been reduced, it follows that fewer storage areas are needed. Figure 7-4 shows the reduction in the number of RCRA compliance sites. However, Figure 7-4 does not reflect the change in the nature of JCNNM's remaining storage areas. JCNNM has closed all but one of its less-than 90-day storage areas in favor of satellite and universal waste storage areas. This change reflects a diminished need for volume capacity for waste storage areas.

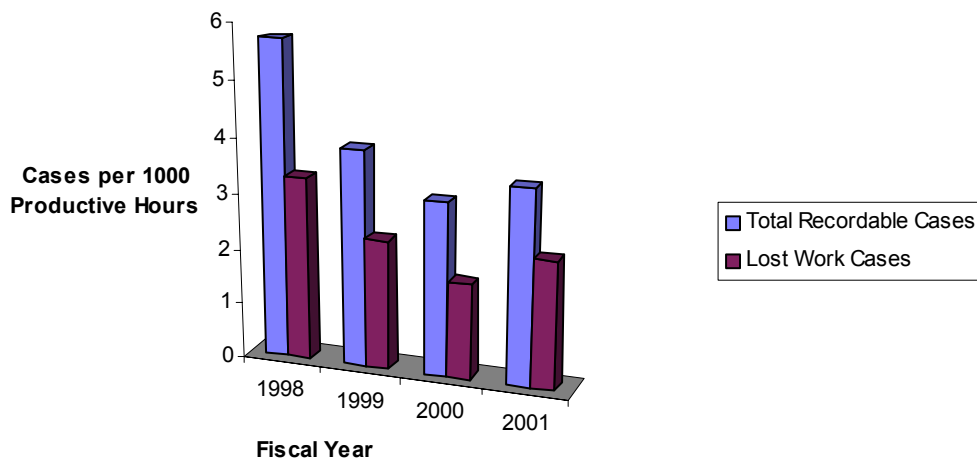


\* to date

Figure 7-4. JCNNM number of RCRA compliance sites

## 7.2 Customer, Supplier, Employee and Other Results

In addition to waste reductions, JCNNM has done an impressive job of reducing the number of injuries suffered by its employees. Figure 7-5 shows the reduction in the two OSHA categories of injuries – total recordable cases and lost work cases.



\* projected

Figure 7-5. JCNNM number of injuries

### 7.3 Financial Results

By the end of FY 2002, JCNNM had reduced its routine hazardous waste generation by 98% since FY 1997. JCNNM departments have implemented numerous pollution prevention and risk management measures. These projects have resulted in approximately \$46,300 of avoided fees alone. Some of these projects are shown below

#### Aerosol Cans

JCNNM fully implemented its *Green Zia Analysis of Johnson Controls Northern New Mexico Aerosol Cans* action plan. This project included purchasing, siting, and developing procedures for an aerosol can puncturing unit. In FY 2001, this project avoided \$14,400 in labor and waste disposal fees. JCNNM expects to eliminate 232 kilograms of routine hazardous waste per year due to its efforts in this area, with future cost avoidance expected to be \$16,500 per year.

#### Asphalt Gauges

JCNNM identified a reclamation pathway for two asphalt gauges containing low-level radioactive sources and one gauge containing a transuranic radioactive source. This reclamation pathway avoided between \$3,000 (on-site) and \$12,000 (off-site) in disposal costs for the Laboratory. JCNNM also worked with gauge manufacturers to take back old gauges when new ones are purchased to avoid future disposal issues.

#### Bioremediation

After five years of discussion with Laboratory ESH personnel, JCNNM initiated a bioremediation project for petroleum-contaminated soil at TA-60-1. JCNNM gained consensus with ESH Division personnel and developed procedures for bioremediating contaminated soil in large containers placed on secondary containment. Over the course of the project, visual inspection has verified that degradation is occurring. Independent analytical verification is pending. Based on the success of this project to date, JCNNM developed procedures for treating some contaminated soils *in situ*. Cost avoidance for FY 2001 was \$8,000 and is expected to be \$12,000 per year thereafter. When combined with JCNNM's spill prevention efforts, this project will essentially eliminate the disposal of petroleum-contaminated soils from routine operations.

#### Tritium Exit Signs

JCNNM coordinated a vendor buy-back program with Summit Electric for the removal and reclamation of exit signs containing tritium. Approximately 400 exit signs were processed through this program in FY 2001, which kept them from being disposed of as low-level radioactive waste. LANL and JCNNM realized a cost savings of \$48,383 in waste management fees.

Finally, the fee JCNNM receives from LANL is related to the environmental performance measures discussed in Section 3. Over the course of the contract, JCNNM's environmental initiatives have resulted in \$1.897 million in earned fee. Further, JCNNM expects to earn \$885,000 in fee from its environmental initiatives for FY 2002.

## Acronyms

AHA	activity hazard analysis
BUDO	Business Operations Department
CQI	continuous quality improvement
DOE	Department of Energy
E2	energy efficiency
EAP	Employee Assistance Program
EPA	Environmental Protection Agency
ESH-ID	environment, safety, and health identification form
ES&H	environment, safety, and health
ESO	Environmental Stewardship Office
F&IB	Feedback & Improvement Board
FWO	Facility and Waste Operations Division
FY	fiscal year
HENV	Environmental Branch, HSEO
HSE	Health, Safety, and Environment Manual
HSEO	Environment, Safety, and Health Department
ISM	Integrated Safety Management
ISO	International Standards Organization
JCNNM	Johnson Controls Northern New Mexico
JIT	just-in-time
LANL	Los Alamos National Laboratory
MS	mail stop
NMED	New Mexico Environment Department
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
PADO	Performance Assurance Department
P2	pollution prevention
RCRA	Resource Conservation and Recovery Act
RRES	Risk Reduction Environmental Stewardship Division
UC	University of California
VOTE	Voice of the Employee